WHAT IS CLAIMED IS:

1. A method for measuring an approximate barometric pressure for use in a control logic for an internal combustion engine having exhaust gas recirculation and a variable geometry turbocharger (VGT) to provide a boost pressure at an engine intake, the VGT having a boost pressure sensor, the method comprising:

determining whether the control logic is operating in a boost control mode;

determining whether the engine is idling;

commanding the VGT to a zero boost geometry, wherein the command is issued if the control logic is operating in the boost control mode and the engine is idling;

maintaining the VGT in the zero boost geometry for a predetermined time interval if the engine continues to idle throughout the predetermined time interval;

returning the control logic to the boost control mode if the engine ceases to idle during the predetermined time interval; and

storing a boost pressure sensor measurement at the end of the predetermined time interval as a barometric pressure value in the control logic and returning the control logic to the boost control mode, if the engine idles throughout the predetermined time interval.

2. The method of claim 1 wherein the boost pressure sensor measurement is substituted in the control logic for a measurement from a failed barometric pressure sensor.

3. The method of claim 1 wherein:

the VGT is a variable nozzle turbocharger having movable vanes to vary the geometry; and

the zero boost geometry is achieved by fully opening the vanes.

4. A method for controlling an internal combustion engine having a variable geometry turbocharger (VGT) to provide a boost pressure at an engine intake, the VGT having a boost pressure sensor, the method comprising:

calculating a feedforward VGT geometry command to provide a desired boost pressure;

monitoring whether the boost pressure sensor has failed;

calculating an adjusted VGT geometry command based at least partially on feedback from the boost pressure sensor, wherein the adjusted command comprises an adjustment to the feedforward command, and setting the VGT geometry according to the adjusted command, if the boost pressure sensor has not failed; and

setting the VGT geometry according to the feedforward command, if the boost pressure sensor has failed.

5. The method of claim 4 wherein the feedforward VGT geometry command is calculated from an engine speed and a demanded engine torque.

6. The method of claim 4 wherein:

the VGT is a variable nozzle turbocharger having movable vanes to vary the geometry;

the feedforward VGT geometry command is expressed as a command to open the vanes to a first extent; and

the adjusted VGT geometry command is expressed as a command to open the vanes to a second extent.

7. A method for controlling an internal combustion engine having a variable geometry turbocharger (VGT) to provide a boost pressure at an engine intake, the turbocharger having a turbine shaft, a boost pressure sensor, and a turbo speed sensor for measuring a rotational speed of the turbine shaft, the method comprising:

calculating a feedforward VGT geometry command to provide a desired boost pressure;

calculating an adjusted VGT geometry command based at least partially on feedback from the boost pressure sensor, wherein the adjusted command comprises an adjustment to the feedforward command;

monitoring whether the turbo speed sensor has failed;

setting the VGT geometry according to the adjusted command, if the turbo speed sensor has not failed;

setting the VGT geometry according to the adjusted command if the adjustment to the feedforward command would not increase the rotational speed of the turbine shaft, and setting the VGT geometry according to the feedforward command if the adjustment to the feedforward command would increase the rotational speed of the turbine shaft, if the turbo speed sensor has failed.

8. The method of claim 7 wherein the feedforward VGT geometry command is calculated from an engine speed and a demanded engine torque.

9. The method of claim 7 wherein:

the VGT is a variable nozzle turbocharger having movable vanes to vary the geometry;

the feedforward VGT geometry command is expressed as a command to open the vanes to a first extent;

the adjusted VGT geometry command is expressed as a command to open the vanes to a second extent; and

the adjustment to the feedforward command increases the rotational speed of the turbine shaft if the second extent is less open than the first extent.

10. The method of claim 7, further comprising:

limiting a maximum available engine torque, if the turbo speed sensor has failed.

11. A method for controlling an internal combustion engine having a variable geometry turbocharger (VGT), the VGT having a compressor with an inlet temperature sensor and an outlet temperature sensor, the method comprising:

determining whether the compressor outlet temperature sensor has failed;

determining an engine torque limitation value corresponding to a compressor inlet temperature sensor measurement, and limiting an engine torque according to the engine torque limitation value, if the compressor outlet temperature sensor has failed.

12. The method of claim 11 wherein the engine torque limitation value corresponding to the compressor inlet temperature sensor measurement is obtained from a lookup table.

13. The method of claim 11 wherein the engine torque limitation value is expressed as a percentage of a maximum available engine torque.

14. A method for approximating a compressor inlet temperature for use in a control logic for an internal combustion engine having an intake manifold temperature sensor and a variable geometry turbocharger (VGT), the VGT having a compressor with an inlet temperature sensor and an outlet temperature sensor, the method comprising:

determining whether the compressor inlet temperature sensor has failed;

storing a minimum value from among an intake manifold temperature sensor measurement, a compressor outlet temperature sensor measurement, and a default compressor inlet temperature value as a compressor inlet temperature value in the control logic, and programming an auxiliary emissions control device to activate if a compressor outlet temperature sensor measurement exceeds a threshold value, if the compressor inlet temperature sensor has failed.

15. A method for controlling an internal combustion engine having an exhaust gas recirculation (EGR) system, a variable geometry turbocharger (VGT), and a controller, the method comprising:

comparing an EGR flow rate to a minimum acceptable EGR flow rate;

comparing the EGR flow rate to a desired EGR flow rate;

operating the controller in an EGR mode, if the EGR flow rate is not greater than the desired EGR flow rate throughout a predetermined time interval, and if the EGR flow rate is not less than the minimum acceptable EGR flow rate; and

operating the controller in a boost mode, if the EGR flow rate is greater than the desired EGR flow rate throughout the predetermined time interval, or if the EGR flow rate is less than the minimum acceptable EGR flow rate.

16. The method of claim 15, further comprising:

limiting a maximum available engine torque, if the EGR flow rate is greater than the desired EGR flow rate throughout the predetermined time interval, or if the EGR flow rate is less than the minimum acceptable EGR flow rate.